# Derivation of test data curve fits - NO$_x$ vs O$_2$

A linear correlation was used to derive the NO$_x$ relationship to flue gas O$_2$ for each overfire damper setting. A least squares curve fit was used to fit a straight line through the NO$_x$ data using the equation:

$$y = mx + b$$

where y is the stack NO$_x$ (#/mbtu), x is flue gas O$_2$%, and, m and b are constants.

The following tables show the test NO$_x$ data points, derived constants, and r$^2$ values for each OFA damper setting test series.

| No Overfire Air | | 10% Overfire Air | | 12% Overfire Air | | 14% Overfire Air | |
|---|---|---|---|---|---|---|---|
| %O2 | NOx (#/mbtu) | %O2 | NOx (#/mbtu) | %O2 | NOx (#/mbtu) | %O2 | NOx (#/mbtu) |
| 1.7 | 0.350 | 1.7 | 0.306 | 1.9 | 0.342 | 2.0 | 0.314 |
| 2.1 | 0.377 | 1.9 | 0.327 | 2.5 | 0.382 | 2.4 | 0.359 |
| 2.6 | 0.418 | 2.5 | 0.378 | 2.7 | 0.417 | 2.7 | 0.377 |
| 3.1 | 0.529 | 3.0 | 0.438 | 3.0 | 0.382 | 3.8 | 0.375 |
| 3.2 | 0.413 | 3.3 | 0.399 | | | | |
| r$^2$ = 0.6079 | | r$^2$ = 0.7961 | | r$^2$ = 0.9344 | | r$^2$ = 0.5849 | |
| m = 0.0801 | | m = 0.0709 | | m = 0.0658 | | m = 0.029 | |
| b = 0.2136 | | b = 0.193 | | b = 0.2146 | | b = 0.2772 | |